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Application No. 10/511,023
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TC Art Unit: 3736
Confirmation No.: 8760

REMARKS

Claims 1-70 are pending. Claims 1-70 stand rejected under 35 U.S.C. §103(a). Claims 1 and 29 have been amended. No new matter has been added. The Applicants respectfully traverse the grounds for rejection and requests withdrawal thereof.

SECTION 103(a) REJECTIONS

Claims 1-4, 14-19, 21-37, 39-41, 46, 47, 49-66, and 68-70 stand rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent Number 6,063,046 to Allum ("Allum") in view of U.S. Patent Number 4,813,436 to Au ("Au"); claims 5-10, 20, 42-45, and 48 stand rejected under 35 U.S.C. 103(a) as unpatentable over Allum and Au, further in view of U.S. Patent Number 6,174,294 to Crabb, et al.; claims 11-13 stand rejected under 35 U.S.C. 103(a) as unpatentable over Allum and Au, further in view of U.S. Patent Application Publication Number 2002/0055779 to Andrews; and claims 38 and 67 stand rejected under 35 U.S.C. 103(a) as unpatentable over Allum and Au, further in view of U.S. Patent Number 4,745,930 to Confer. The Applicants respectfully traverse the grounds for rejection for the following reasons.

Claims 1-4, 14-19, 21-37, 39-41, 46, 47, 49-66, and 68-70

The Examiner relies on Allum for disclosing a "stimulator that is attached to a body surface part" of the user. More specifically, the Examiner asserts that Allum discloses a

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stimulator that is securable to the user's leg. The Applicants respectfully disagree.

Allum is completely silent about attaching stimulators to the user's body surface. According to Allum,

the system processor 24 is programmed to control the support platform 26 to perturb the stance of a subject 22 standing on the support platform 26 in either a pitch or roll direction, or a combination thereof.

* * *

[and] the system processor 24 may also be programmed to provide feedback 38 of the balance correction information to the subject 22. As will be discussed in more detail below, the balance correction feedback 38 may be provided to a subject in visual, auditory, or tactile form, or may be provided in the form of a varying electrical signal for directly stimulating the vestibular nerve. Visual 40, auditory 42, tactile 44, and electro-vestibular 46 feedback systems may, therefore, be provided in accordance with the present invention to deliver balance correction feedback signals provided by the system processor 24 to the subject 22.

U.S. Patent Number 6,063,046, col. 10, lines 15-34 (Emphasis added). FIG. 1 and FIG. 2 show body sway sensors (84) and EMG electrodes (86) that are attached to the user. However, these sensors and electrodes are adapted to provide data and do not stimulate a body surface part or the leg of the user. Thus, the only "stimulation" mentioned in Allum deals with "a varying electric signal for directly stimulating the vestibular nerve." Id., col. 10, lines 29-30; col. 26, line 57-58 (Emphasis added). The vestibular nerve, however, is associated with the inner ear, which is not a body surface part.

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The stimulation claimed in the present invention facilitates cognitive recognition and cognitive response to a stimulation that has no direct impact on a nerve related to balance control, rather than the non-cognitive stimulation of the inner ear as taught by Allum.

The Examiner also alleges that the Allum signal processing subsystem converts balance information signals into an estimate of a magnitude of force applied to a sole of at least one foot of a user. The Applicants respectfully disagree. Allum merely applies force transducers (82) to the corners of a support surface (48) to measure pitch and roll angular displacements. Allum is completely silent about converting transducer signals into a force estimate.

The Examiner asserts that the Allum signal processing system determines a magnitude of the resultant reaction force applied to the sole of the user. The Applicants respectfully disagree. As above, Allum applies force transducers (82) to the corners of a support surface (48) to measure pitch and roll angular displacements. Allum is completely silent about converting transducer signals into a force estimate.

The Examiner concedes that Allum does not teach, mention or suggest collecting and analyzing balance data during gait, asserting, however, that Au discloses a motion analysis system that incorporates pressure-sensitive shoes or insoles that can be worn when standing or during gait and, moreover, that it would have been obvious to combine Allum with Au. More particularly, with respect to Au, the Examiner maintains that the pressure-sensitive shoes or insoles provide signals indicative of pressure applied to the patient's foot.

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Au discloses foot insoles or sandals (27, 28) that include a plurality of pressure-sensitive transducers (29-32) that "generate signals proportional to the pressure applied on the various areas of the foot while the subject being monitored is walking or running." U.S. Patent Number 4,813,436, col. 7, lines 27-29. Au, however, is completely silent about using the pressure data to generate a stimulation control signal that is transmitted to a stimulator attached to the patient, to stimulate a body part of the patient proportional to the pressure data as recited in claim 1. Accordingly, neither Allum nor Au teaches, mentions or suggests a portable system for assisting the maintenance of balance that provides stimulation signals to a stimulator disposed on the body surface of the user and/or stimulating the body part.

Accordingly, the Applicants respectfully assert that claims 1 and 39 and all claims depending therefrom are not made obvious by Allum in view of Au and are in condition for allowance.

Claims 5-10, 20, 42-45, and 48

The shortcomings of the Allum and Au references have been discussed above. Nor can the Crabb reference make up for the deficiencies of the Allum and Au references.

As provided in our first response, Crabb lacks the stimulation function and, more specifically, the body surface part stimulation of the invention as claimed.

Claims 11-13

The shortcomings of the Allum and Au references have been discussed above. Nor can any of the Andrews reference make up for the deficiencies of the Allum and Au references. As provided in

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our first response, Andrews provides a system to block neural activities, an "electrical nerve block for clinical use" such as to reduce spacticity and the like. Since Applicants' electrical signals are applied as a stimulus, the teaching of Andrews is completely opposite. Furthermore, Andrews would not be looked to by those skilled in the art for suggestions for use in a system operating to achieve a completely opposite goal. Andrews fails to disclose a skin inserted stimulating signal.

Claims 38 and 67

The shortcomings of the Allum and Au references have been discussed above. Nor can the Confer references make up for the deficiencies of the Allum and Au references. Confer teaches a sensor system and not a combined sensor and stimulator system so adds nothing beyond Allum and/or Au. Thus, one skilled in the art would not look to Confer for suggestions on a stimulator system for maintaining balance. More particularly claims 38 and 67 do not require the stimulation be at least in part a function of ankle angle. This is nowhere taught or suggested in Confer, Allum or Au.

Accordingly, the Applicants respectfully assert that claims 5-13, 20, 38, 42-45, and 48, and 67 are not obvious and by Allum and Au, further in view of Crabb, Andrews and/or Confer and are in condition for allowance.

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The Examiner is encouraged to telephone the undersigned attorney to discuss any matter that would expedite allowance of the present application.

Respectfully submitted,

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